MODULAR MIST SPRAYER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a modular mist sprayer, and more particularly to a mist sprayer that enhances and optimizes the atomized effect of the liquid.

2. Description of the Related Art

A conventional mist sprayer in accordance with the prior art is disclosed in the Taiwanese Patent Publication No. 395205. However, the conventional mist sprayer usually has a fixed structure, so that the shape and configuration of the conventional mist sprayer cannot be varied and adjusted, thereby limiting the versatility of the mist sprayer. In addition, the atomized liquid is directly drained upward and outward, such that the atomized effect of the liquid is not sufficient.

SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide a mist sprayer having a modularized structure, so that the shape and configuration of the mist sprayer can be varied and adjusted easily and conveniently, thereby enhancing the versatility of the mist sprayer.

Another objective of the present invention is to provide a mist sprayer, wherein the liquid is mixed with and atomized by the pressurized gas

and the misted gas hits the striking face of the guide unit to multiple misted molecules, thereby enhancing and optimizing the atomized effect of the liquid.

A further objective of the present invention is to provide a mist sprayer, wherein the mounting seat has a plurality of guide channels, thereby enhancing the atomized effect of the liquid.

In accordance with the present invention, there is provided a mist sprayer, comprising:

a base;

a mounting tube mounted on of the base;

an injection unit mounted on the mounting tube;

a pressure storage member mounted in and communicating with the injection unit;

a mounting seat mounted on the injection unit and having an inside communicating with the injection unit;

a guide unit mounted on the mounting seat; and

a bottle having a lower end mounted on the injection unit and having an inside communicating with the mounting seat.

Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an exploded perspective view of a mist sprayer in accordance with the preferred embodiment of the present invention;

Fig. 1A is a plan cross-sectional enlarged view of a mounting seat of the mist sprayer as shown in Fig. 1;

Fig. 2 is a plan cross-sectional assembly view of the mist sprayer as shown in Fig. 1;

Fig. 2A is a partially enlarged view of the mist sprayer as shown in Fig. 2;

Fig. 3 is a schematic operational view of the mist sprayer as shown in Fig. 2 in use; and

Fig. 3A is a partially enlarged view of the mist sprayer as shown in Fig. 3.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings and initially to Figs. 1 and 2, a mist sprayer in accordance with the preferred embodiment of the present invention comprises a base 10, a pump 20, a pressure storage member 21, a circuit board 30, a mounting tube 40, an injection unit 50, a decorative shade 60, a mounting seat 70, a guide unit 80, a bottle 90, and a plug 91.

The base 10 has an inside formed with a receiving chamber 11 and provided with two opposite holders 12 each located beside the receiving chamber 11. The receiving chamber 11 of the base 10 has a bottom formed with a plurality of through holes 13.

The circuit board 30 is mounted in the receiving chamber 11 of the base 10 and is provided with a plurality of light emitting diodes (LED) 31.

The mounting tube 40 is mounted in the receiving chamber 11 of the base 10 and positioned by the two opposite holders 12 of the base 10. Preferably, the mounting tube 40 is rested on the circuit board 30.

The injection unit 50 includes a circular cover 51 mounted on the mounting tube 40, a nozzle 53 mounted on an upper end of the cover 51 and formed with a tapered head 532, a mounting section 52 mounted on a lower end of the cover 51 and rested on the mounting tube 40, and a plurality of sealing rings 531 mounted on the nozzle 53 and rested on the cover 51. Preferably, the mounting section 52 of the injection unit 50 has a stepped shape and has an enlarged edge 522 rested on a top of the mounting tube 40 and a reduced edge 524 secured in the mounting tube 40. In addition, the cover 51 of the injection unit 50 has a periphery formed with a plurality of locking slots 511 equally spaced from each other, and the mounting section 52 of the injection unit 50 has a periphery formed with a plurality of slits 521 equally spaced from each other, so that the mounting section 52 of the injection unit 50 is flexible. Preferably, each of the slits 521 of the mounting section 52 is extended into the cover 51 of the injection unit 50.

The pressure storage member 21 is a cylindrical body having a substantially U-shaped cross-section. The pressure storage member 21 is mounted in the cover 51 of the injection unit 50 and has a bottom formed with

a socket 212 and has a top having a periphery formed with a plurality of locking blocks 211 each locked in a respective one of the locking slots 511 of the cover 51. The locking blocks 211 of the pressure storage member 21 are inserted into the locking slots 511 of the cover 51 by flexibility of the mounting section 52 provided by the slits 521. An O-ring 56 is mounted between an inner wall of the cover 51 of the injection unit 50 and the top of the pressure storage member 21.

The pump 20 is mounted in the mounting tube 40 and has a top provided with a mouth 201 inserted into the socket 212 of the pressure storage member 21 and a bottom in contact with the circuit board 30 which is used to control operation of the pump 20.

The decorative shade 60 is mounted between the mounting tube 40 and the injection unit 50 and has a top having an inner edge formed with a mounting flange 61 mounted on the enlarged edge 522 of the mounting section 52 and rested on the top of the mounting tube 40.

The mounting seat 70 is a hollow body. The mounting seat 70 is mounted on the nozzle 53 of the injection unit 50 and has a tapered upper portion 74 mounted on the tapered head 532 of the nozzle 53. The tapered upper portion 74 of the mounting seat 70 is formed with an aperture 73 (see Fig. 2A) communicating with the nozzle 53 of the injection unit 50. The mounting seat 70 has a periphery formed with a plurality of mounting holes 71 and has an inner wall formed with a plurality of guide channels 72 (see Fig. 1A) each

communicating with the aperture 73 and each having a gradually reduced distal end.

The guide unit 80 is mounted on the mounting seat 70 and has a bottom formed with a conical striking face 81 facing the aperture 73 of the mounting seat 70 and a top formed with a pointed guide face 83. The guide unit 80 has a periphery formed with a plurality of inserts 82 each inserted into a respective one of the mounting holes 71 of the mounting seat 70.

The bottle 90 is mounted on the injection unit 50 and has an inside communicating with the guide channels 72 of the mounting seat 70. The bottle 90 has a lower end formed with a mounting portion 901 mounted on the nozzle 53 of the injection unit 50, and the sealing rings 531 are sealed between the nozzle 53 of the injection unit 50 and the bottle 90.

The plug 91 is mounted on an upper end of the bottle 90 and has an inside formed with a horn-shaped through hole 911 communicating with the bottle 90.

In operation, referring to Figs. 3 and 3A with reference to Figs. 1 and 2, a liquid "w" is poured into the bottle 90. Then, the pump 20 is operated by the circuit board 30 to inject a gas through the mouth 201 and the socket 212 into the pressure storage member 21 which is used to pressurize and store the gas. Then, the pressurized gas is ejected outward from the nozzle 53 of the injection unit 50 and is directed toward the aperture 73 of the mounting seat 70. At this time, the bottle 90 has an inside communicating with the guide channels

72 of the mounting seat 70 and each of the guide channels 72 communicates with the aperture 73, so that the liquid "w" in the bottle 90 is drawn through the guide channels 72 to the aperture 73 by action of the siphon principle. In such a manner, the liquid "w" is mixed with and atomized by the pressurized gas in the aperture 73 of the mounting seat 70 to form a misted gas. Then, the misted gas is pushed upward to hit the striking face 81 of the guide unit 80, thereby forming multiple misted molecules, wherein the smaller misted molecules are guided by the guide face 83 to move upward and the larger misted molecules directly fall onto the liquid "w" in the bottle 90, thereby forming a circulation effect. Finally, the smaller misted molecules are ejected outward from the through hole 911 of the plug 91.

Accordingly, the mist sprayer has a modularized structure, so that the shape and configuration of the mist sprayer can be varied and adjusted easily and conveniently, thereby enhancing the versatility of the mist sprayer. In addition, the liquid is mixed with and atomized by the pressurized gas and the misted gas hits the striking face 81 of the guide unit 80 to multiple misted molecules, thereby enhancing and optimizing the atomized effect of the liquid. Further, the mounting seat 70 has a plurality of guide channels 72, thereby enhancing the atomized effect of the liquid.

Although the invention has been explained in relation to its preferred embodiment(s) as mentioned above, it is to be understood that many other possible modifications and variations can be made without departing from the

scope of the present invention. It is, therefore, contemplated that the appended claim or claims will cover such modifications and variations that fall within the true scope of the invention.